NISTTech

Liposome Immunoanalysis by Flow Injection Assay

Description

The following invention combines the use of liposomes in an immunoanalysis method with a flow injection analysis system. Utilizing the same principles as the enzyme-linked immunosorbent assay (ELISA), the liposome immunosorbant assay (LISA) takes a mere 40 minutes compared to the ELISA that takes 3.5 hours. Additionally, the LISA allows for a quantification of particulate infectious agents. Therefore, for every liposome not bound to the column, 1x105 molecules of marker compound are available for detection and quantification. The LISA is also at least two orders of magnitude more sensitive than the corresponding ELISA. Finally, the LISA can be used for the purpose of diagnostics and rapid detection and quantization. It is evident that the LISA is significantly better compared to current methods, such as the ELISA.

Abstract

A method of immunoanalysis combines immobilized immunochemistry with the technique of flow injection analysis, and employs microscopic spherical structures called liposomes, or lipid vesicles, as carriers of detectable reagents. Liposomes are modified on their surface with analytical reagents, and carry in their internal volume a very large number of fluorescent or electroactive molecules. Aspects of this embodiment of the invention include the chemistry for covalent immobilization of antibody fragments in a specified orientation, the use of liposomes in a flow injection analysis system, and the combination of automated sampling and analysis with reusable immunoreactants. Another aspect of the invention involves the non-covalent binding of liposomes to a receptor for use in a homogeneous assay. In another aspect of the invention the intensity of scattered light is quantitated as a measure of liposome aggregation in response to a concentration-dependent immunospecific reaction.

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References

- Expired U.S. Patent # 5,389,523 issued 02-14-1995 , expired 02/14/2012
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Status of Availability

This technology is available in the public domain.

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